PE 6 P 100/320 RS 27
RS 69
PE 6 P 90/320 RS 69
PE 6 P 100/320 RS 27,RS 69
See page 2!

RQ 200/1100 P 17 R
.. PA24 R
RQ 200/1000 PA40 R
RQV200-1100 PA 37R

supersedes
company: D A F
engine: van Doorne,Eindhoven P 680

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 10 Ø cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery 9 Ø cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,3 - 12,9	0,5		9,5 - 9,9	
600	9	5,2 - 6,2			2,9 - 3,9	
600	12	11,5 - 12,7			7,8 - 8,8	
600	15	17,3 - 18,5			12,8 -14,3	
200	9	3,4 - 4,4			1,5 - 2,5	

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

RQ 200/1100 ..

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
500	15,6-16,4	500	16,0	1100	15,6-16,0	490	0	100	6,0-8,1	-	-
				1120	10,5-15,4			200	4,4-6,4		
				1150	1,0-10,7			300	1,6-3,9		
				1180	0 - 5,5			390	0		
				1210	0						

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
850						
850	114,5-117,5	ca.128 cm³/1000 H.			100	26 - 28
ca.	10,5 mm RW					
850	114,5-117,5	1110 - 1120			100	mind. 21 mm RW

Checking values in brackets

A1

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1100 1150 1200 1250 1310	14,8-17,8 10,0-14,1 4,0-10,2 0 - 6 0	-	-	-	ca.10	100 200 300 400 550 710	6,3-8,0 4,5-6,9 3,4-3,8 2,6-3,8 1,2-2,6 0	-	-

Torque control travel a = 0 mm

Testoil-ISO 4113

B. Governor Settings

RQ 200/1000 PA 40 R

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Full-load speed regulation Test specifications (4)		Idle speed regulation Setting point		Idle speed regulation Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
450	15,7-16,3	450	16,0	1000 1020 1050 1110	15,8-16,0 10,0-15,0 0,5-10,0 0	440	0	100 200 300 340	7,0-8,1 4,5-6,7 0 -2,5 0	-	-

(2)

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation At 1 mm less control rod travel

Test sequence for full-load adjustment (RQ governor)

1. Screw stop bushing of excess-fuel stop for starting on to threaded bushing as far as it will go.
2. Fit excess-fuel stop for starting.
3. Set delivery (Section C, Columns 1 and 3) by turning back stop bushing at excess-fuel stop for starting. This operation represents setting of the control-rod stop.
4. Set full-load delivery (Section C, Column 2) at control lever and stop screw of governor.

Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4 VOL 10,0 a
Edition 10.68

En

PE 6 P 100/320 RS 50 EP/MZ 80 P 2/1

supersedes 10.66
company Volvo
engine D 100 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
1000	12	11,5 - 12,3	0,5			2,5 ± 0,1*
600	6	0,5 - 1,2				(max.2,2-2,9)
	9	4,6 - 5,8				
	12	11,4 - 12,2				
200	9	2,8 - 4,0				

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Torque control travel mm 1	Leakage: Vacuum pressure drop mm water col. 2	Leakage: Time at least s 3	Control-rod travel limitation breakaway*: Vacuum mmw.c. 4	Control-rod travel limitation breakaway*: Control rod travel mm 5	Control rod travel test: Vacuum mm w.c. 6	Control rod travel test: Control rod travel mm 7	Auxiliary spring auxiliary cam**: Vacuum mm w.c. 8	Auxiliary spring auxiliary cam**: Control rod travel mm 9	Torque control: Vacuum mm w.c. 10	Torque control: Control rod travel mm 11
	500-480	10			1090	4,8-5,4	700	11,7-12,3		
							900	6,4- 8,7		
							1200	4,4- 5,1		
							1500	4,3- 5,1		

control rod travel test (cols. 4-11)
= rotational speed 500 rev/min.
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp. 40°C (104°F): rev/min 1	Vacuum mm wat. col. 2	cm³/1000 strokes 3	Fuel delivery characteristics: rev/min 4	Vacuum mm wat. col 5	cm³/1000 strokes 6	idle (stop)** idle (imbalance): rev/min 7	Vacuum mm wat. col.	Control road travel from full-load to idle mm cm³/1000 strokes 8
600	0	105,0-107,0 (95,0- 97,0)	1080	0	113,0-117,0	Start 100	ca. 190	

Checking values in brackets

A3

A3

(1)

Valeurs d'essai Pompes d'injection (1) et Régulateurs

40

VDT-WPP 001/4 SCA 11,0 f
Edition 8.69

Fr

PE 6 P 90/720 RS 74 — EP/MZ 80 P 3 R ./.
RS 75 — RQV 250-..PA 47 R
RS 81 — EP/MZ 80 P 4 R ./.

Remplace 6.67
Firme: Scania Vabis
Moteur: D 11

..Z..P Voir page 2!
contrôle du début de refoulement sans/avec membrane

Toutes les valeurs d'essai ne sont valables que pour les bancs d'essai et les contrôleurs Bosch pour pompes d'injection

A. Réglages de la pompe d'injection

Début de refoulement pour une précourse de 2,6 + 0,1 mm (à partir du P.M.B.)

Vitesse tr/mn 1	Course de la tige de réglage mm 2	Débit d'injection cm³/100 coups 3	Différence cm³/100 coups 4	Course de la tige de réglage mm 2	Débit d'injection cm³/100 coups 3	Tension initiale du ressort (soupape de correction) mm 6
1000	12	8,5 - 9,2	0,4			2,5 ± 0,1* (max.2,2-2,9)
600	9	2,9 - 3,9	** En case de dispersion plus importante, modifier en conséquence la tension initiale des ressorts des soupapes de refoulement. Section C, col. 6-7, 7-9			
	12	7,4 - 8,4				
	15	12,2 -13,5				
200	9	1,8 - 2,8				

Réaliser l'équilibrage des débits d'après les valeurs encadrées ☐
RQV 250-1100 PA 47 R Voir page 3

Testöl-ISO 4113

B. Réglages du régulateur

Vitesse nominale maximale: Déviation du levier de commande Degrés 1	tr/mn RW* mm 2	Course de la tige de réglage (1a) mm tr/mn (2a) 3	Vitesse nominale moyenne: Déviation du levier de commade Degrés 4	tr/mn 5	Course de la tige de réglage mm (4) 6	Vitesse nominale minimale: Déviation du levier de commande Degrés 7	tr/mn 8	Course de la tige de réglage mm (3) 9	Course du manchon central (1) tr/mn 10	mm 11
ca.68	1150	15,0-18,2	-	-	-	ca.10	200	5,8-8,0	-	-
	1350	0 - 1,5					300	3,1-4,4		
ca.62	1100	15,0-17,8					400	2,6-3,6		
	1150	10,2-13,8					500	1,8-3,0		
	1200	5,0-10,0					600	0,8-2,0		
	1250	0 - 3,2				(3a)	780	0		
	1280	0								

Course de correction, cote a = mm.

RW* = Course de la tige de réglage

C. Réglages de la pompe d'injection avec régulateur accolé

Débit de pleine charge Butée de la tige de réglage (température de l'huile d'essai 40°C) (2) tr/mn 1	cm³/1000 coups 2	Limitation de vitesse vitesse intermédiaire (2b) (4a) tr/mn 3	Variations du débit vitesse maximale a vide (5a) (5b) tr/mn 4	cm³/1000 coups 5	Débit de surcharge au démarrage (6) Ralenti point d'inversion tr/mn 6	cm³/1000 coups 7	Course de correction (5) tr/mn 8	mm RW* 9
1080	123,5-126,5 (14,0 ± 0,5 mmRW)	1120	600	113,0-117,0	1200	dispersion max.0,4	Pe S 75	./.
					100	21 - 26		

Valeurs de contrôle entre parenthèses.

* Course de la tige de réglage inférieure de 1 mm à la valeur indiquée à la colonne 2.

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
250 - 700										
68±1,5	800	14,0-17,0	-	-	-	10±1,5	180	6,4-8,0	-	-
	950	0 - 1,5					250	4,2-7,0		
63±1,5	700	15,0-17,6					320	2,6-3,8		
	750	7,5-13,0					400	1,5-2,9		
	800	0 - 8,0					520	0		
	870	0								
250 - 750										
68±1,5	800	14,0-17,0				10±1,5	180	6,4-8,0	-	-
	950	0 - 1,5					250	4,2-6,5		
66±1,5	750	15,0-18,0					320	2,4-3,8		
	800	7,5-13,0					400	1,4-2,8		
	850	0 - 7,0					520	0		
	900	0								
250 - 800										
62±1,5	800	15,0-17,8				10±1,5	180	6,3-8,0		
	850	10,4-14,2					250	4,2-6,6		
	900	5,0-10,5					320	2,1-3,8		
	950	0 - 7					400	1,4-3,0		
	1030	0					590	0		
250-850										
64±1,5	850	15,0-18,0				10±1,5	180	6,4-8,0		
	900	10,0-14,4					250	4,0-6,2		
	950	4,2-10,4					320	2,0-3,6		
	1000	0 - 6					450	0,9-2,3		
	1060	0					580	0		
250- 900										
66±1,5	900	15,0-18,0				10±1,5	180	6,4-8,0		
	950	9,0-14,0					250	4,4-6,6		
	1000	2,0- 9,2					320	2,2-3,8		
	1030	0 - 7					450	0,3-1,5		
	1090	0					590	0		
250 - 950										
68±1,5	1000	15,0-18,2				10±1,5	180	6,3-8,0		
	1200	0 - 1,5					250	4,3-6,5		
66±1,5	950	15,0-18,0					320	2,5-3,8		
	1000	10,0-14,0					450	1,4-3,0		
	1050	3,0-10,0					630	0		
	1150	0								
250 - 1000										
68±1,5	1150	15,0-18,2				10±1,5	180	6,4-8,0		
	1360	0 - 1,5					250	4,3-6,5		
63±1,5	1000	15,0-18,0					320	2,8-3,8		
	1080	8,0-13,0					500	1,6-2,9		
	1150	1,6- 8,6					720	0		
	1270	0								
250 - 1050										
68±1,5	1150	15,0-18,2				10 ±1,5	180	6,4-8,0		
	1360	0 - 1,5					250	4,3-6,5		
64±1,5	1050	15,0-17,6					320	2,8-3,8		
	1120	9,0-13,3					500	1,5-4,0		
	1200	0,5- 7,8					720	0		
	1300	0								

Testoil-ISO 4113

A5

A5 En

B. Governor Settings

Torque control travel	Leakage: Vacuum pressure drop	Leakage: Time at least	Control-rod travel limitation breakaway*: Vacuum	Control-rod travel limitation breakaway*: Control rod travel	Control rod travel test: Vacuum	Control rod travel test: Control rod travel	Auxiliary spring auxiliary cam**: Vacuum	Auxiliary spring auxiliary cam**: Control rod travel	Torque control: Vacuum	Torque control: Control rod travel
mm	mm water col	s	mm w c	mm	mm w c	mm	mm w c	mm **	mm w c	mm
1	2	3	4	5	6	7	8	9	10	11
-	800-760	10	-	-	415	4,1-6,3	335	13,5-14,5		
							370	7,8-11,4		
							400	4,4- 6,6		
							440	3,7- 6,0		
							480	3,0- 5,3		

control rod travel test (cols. 4–11)
= rotational speed 500 rev/min
adjust breakaway (cols. 4–5) by means of shims*
cam adjustment (B 8-9 – C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F): rev/min	Vacuum mm wat col	cm³/1000 strokes	Fuel delivery characteristics: rev/min	Vacuum mm wat col	cm³/1000 strokes	Idle (stop)** Idle (imbalance): rev/min	Vacuum mm wat col	Control road travel from full-load to idle mm cm³/1000 strokes
1	2	3	4	5	6	7		8
1080	0	123,5-126,5	600	0	113,0-117,0	Start		
						100	210-260	

Checking values in brackets

Pump ..S 81 with governor ..P 4 R

<u>Functional test of electromagnetic excess-fuel – shutoff stop:</u>

Actuating the starting solenoid must cause the control rod to assume max. control-rod travel (approx. 21 mm control-rod travel).

Actuating the shutoff solenoid must cause the control rod to go immediately to stop; the stop is however to be set such that 1.5-2.5 mm control-rod travel is obtained!

<u>Reduced full-load deliveries ..Z... ..P of pumps ..S 74, ..S 75, ..S 81:</u>

	Full load at n = cm³/1000 H. (Tol. ± 1,0) 1100	900	750	600 U/min	Reduced control road travel mm
X	116	115	110	105	- 0,5
Z	108	107	103	97	- 1,0
V	100	97	94	89	- 1,5
Y	94	91	87	83	- 1,9
U	89	86	82	78	- 2,2
T	83	78	75	71	- 2,6
S	78	72	68	65	- 3,0
R	73	65	61	57	- 3,4
Q	69	60	55	52	- 3,7
P	63	53	47	44	- 4,1

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 MAN 15,0 a
Edition 5.71

En

PESV 8 P 90/320 LS 3 RQ 200/1050 PA 55 DR (1)
LS 5 RQ 200/1050 PA 67 DR (2)
LS 5 RQ 200/1100 PA 67 DR (3) ./.
LS 5 RQV200- PA 77 R (2-3)

supersedes 11.68
company: MAN
engine:
D 2658 M2 (1 - 250 PS)
M20 (2 - 250 PS)
M23 (3 - 275 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7+0,1 / 3,1+0,1 mm (from BDC) LS 3 / LS 5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,5 - 13,1	0,5			
600	6	1,6 - 2,6				
600	12	11,0 - 12,3				
600	15	16,0 - 17,3				
200	6	0,7 - 1,7				

Cam sequence 1-5-4-8-6-3-7-2-1 with 45° offset in each case (see BMP 115/5). Test pump with flushing: Inlet at right-hand plunger-and-barrel assembly bank. Return via overflow valve of left-hand plunger-and-barrel assembly bank.

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

RQ 200/1050 PA 55 D, 67 DR (1,2)

Checking of slider PRG check ① Control rod travel rev/min 1	mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle-speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
500	15,7-16,3	500	16,0	1050	14,7	450	0	100	3,3-7,2	500	16,0
				1070	14,4-14,7			200	3,7-5,7	700	15,9-16,0
				1100	8,8-13,4			300	0 -2,4	900	15,0-15,3
				1130	2,0-10,0			360	0	1000	14,7
				1200	0						

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes mm 7
1050	105,0 - 107,0	Sp. 6 - 7	800	108,0 - 111,0	100	ca. 20
			500	max. 112,0		
1100	116,0 - 118,0		800	107,5 - 110,5*		
			500	max. 104,0		

*Should values not be attained, corresponding torque control can be fitted: Use new torque-control sleeve 1 429 999 015! Torque-control-travel dimension a = 0.15 mm. Test specifications then correspond to ..PA 126 DR; alter name-plate! (see MAN 15.0 b)

Checking values in brackets

A7

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1100 1150 1200 1250 1330	15,0-18,0 10,5-14,8 4,5-11,2 0 - 7 0	-	-	-	ca.10	100 200 300 500 730	7,0-8,2 4,8-7,3 3,4-4,2 1,9-3,3 0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
1050	105 - 107	1120 bzw. 1070	800 500	max. 111 max. 112	100	ca.20		
1100	116 - 118		800 500	max. 110,5 max. 104				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

RQ 200/1100 PA 67 DR (3)

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
500	15,7-16,3	500	16	1100 1150 1180 1230	15,7-16,0 6,0-13,0 0 - 8,8 0	460	0	100 200 300 360	6,2-8,1 4,1-6,2 0,6-3,1 0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp. 40°C (104°F)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

Checking values in brackets

PESV 8 P 90/320 LS 11 *	RQ 200/1100 PA 67 DR	(3)	supersedes –
PESV 8 P 90/320 LS 11Z	RQV200-1100 PA 77 R	(3-4)	company: MAN
PESV 8 P 90/320 LS 11Z	RQ 200/1100 PA 67 DR	(4)	engine: D 2658 M23 (275PS-3)
LS 11	PA 126DR	(4)	D 2858 M 1 (304PS-4)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,5-13,1	0,5			
600	6	1,6- 2,6	Cam sequence 1-5-4-8-6-3-7-2-1 with 45° offset in each case (see BMP 115/5). Test pump with flushing: Inlet at right-hand plunger-and-barrel assembly bank. Return via overflow valve of left-hand plunger-and-barrel assembly bank.			
600	12	11,0-12,3				
600	15	16,0-17,3				
200	6	0,7- 1,7				

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

RQ..PA 67 DR (3,4)

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
500	15,7-16,3	500	16,0	1100	15,7-16,0	460	0	100	6,2-8,1		
				1150	6,0-13,0			200	4,1-6,2		
				1180	0 - 8,8			300	0,6-3,1		
				1230	0			360	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes mm 7
1100	116,0-118,0	Sp. 6 - 7	800 500	107,5-110,5* max. 104,0	100	ca.20

*Should values not be attained, corresponding torque control can be fitted: Use new torque-control sleeve 1 429 999 015! Torque-control-travel dimension a = 0.15 mm. Test specifications then correspond to ..PA 126 DR; alter name-plate!

Checking values in brackets

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
1100	120,0-122,0	Sp. 6 - 7	800 500	115,0-118,0* max. 111,5	100	ca.24

*Torque-control-travel dimension a = 0.15 mm; use torque-control sleeve 1 429 999 015!
Test specifications then correspond to ..PA 126 DR; alter nameplate!

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
500	15,7-16,3	500	16,0	1120 1150 1180 1230	15,0-15,4 7,7-13,4 0 - 8,5 0	470	0	100 200 300 370	6,6-8,1 4,6-6,7 1,2-3,6 0	900 1000	15,8-16,0 15,3-15,5
Refer to (4) for full load											

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1 mm less control rod travel

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1100 1150 1200 1250 1330	15,0-18,0 10,5-14,8 4,5-11,2 0 - 7 0	-	-	-	ca.10	100 200 300 500 730	7,0-8,2 4,8-7,3 3,4-4,2 1,9-3,3 0	-	-

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
1100 (3)	116 - 118	1120	800 500	max.110,5 max.104	100	ca.20		
1100 (4)	120 - 122	1120	800 500	max.118 max.111,5	100	ca.24		

Checking values in brackets

* 1 mm less control rod travel than col. 2

PE 6 P 110/320 RS 174 RQV 200-1100 PA 99 /2R
..A.. RS 174 RQV 200-1100 PA125/ 2R
Port-closing test with/without ROBO diaphragm

supersedes
company: Volvo
engine: D 120

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	17,9-18,7	0,6			2,5±0,1* (max.2,2-2,9)
600	6	3,0- 4,2				
	12	17,3-18,8				
	15	23,5-25,3				
200	6	1,1- 2,1				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

RQV .. 99/2R, 125/2R

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1150	15,5-18,3				ca.23	100	7,0-10,0	200	1,5-2,3
	1410	0					200	5,0- 8,4	500	3,6-4,0
ca.66	1100	15,0-18,0					300	2,4- 5,2	1150	8,3
	1200	7,2-12,6					400	0 - 2,2		
	1260	2,0- 9,0					460	0	-	-
	1400	0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
700	119,0-121,0	1150			100	380-410		
	118,0-122,0				200	12-16	)*	
					dispersion max.1,5		)	

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.74

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4
Edition 24.7.70

En

PE 6 P 120/320 RS155 RQ 300/750 PA105R
RQ 250/750 PA105R

supersedes 9.7.70
company: Daimler-Benz
engine: MB 846 Bb (319 PS)
WMD-Yugoslavia railcar

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	6	6,4 - 7,6				
	12	20,8 -21,5	0,8			
	15	25,6 -27,6				
200	6	2,6 - 3,6				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,7-16,3	550	16,0	750	15,6-16,0	520	0	250	6,9-8,1	-	-
				770	10,0-14,8			300	4,8-7,2		
				800	0 - 8,4			350	2,1-4,8		
				840	0			420	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
730	296,0-300,0	750	300	66,0 . 70,0		
(14,8-15,1 mm RW)			(6,8-7,2 mm RW)			
730	288,0-292,0					

At 765 min-1, control-rod travel must be 0.5 - 1.0 mm less than in Column 2!
When performing check, increase values (Columns 2 and 5) by ± 1 cm³/1000 strokes!

Checking values in brackets

AAS

B. Governor Settings

RQ 250/750 PA 105 R

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
PRG 2 428 100 024			RQ 250/750 P			torque-control travel Maß a = - m					
500	15,7-16,3	500	16,0	660	15,6-16,0	500	0	100	6,2-8,1	-	-
				800	7,4-13,0			200	4,7-6,9		
				830	0 - 9,0			300	1,9-4,3		
				890	0			410	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

Checking values in brackets

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

Checking values in brackets

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 SCA 11,0 h
Edition 10.69

En

PE 6 P 100/720 RS 95, Z...M RQV 250- ... PA 58R (1)
PE 6 P 100/720 RS110, Z...M EP/RSV 350-1100P1/310 R(2)
Start-of-delivery test without - delivery test with Robodiaphragm!
Manifold-pressure compensator and reduced full-load deliveries, page 4

supersedes
company: Scania Vabis
engine: DS 11

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 + 0,1 mm (from BDC) 2,4 + 0,1 S110 Y

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	14,0 - 14,4	0,6			2,5 ± 0,1* (max.2,2-2,9)
600	9	8,2 - 9,4				
600	12	13,6 - 14,9				
600	15	18,6 - 20,1				
200	9	5,9 - 6,9				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
250-1100 PA 58 R (FD → 712)*			-	-	-					
ca.61	1100	15,0-17,6				ca.25	100	6,9-10,0	-	-
	1150	13,0-14,6					200	5,1- 8,3		
	1200	6,5-13,5					300	2,4- 5,0		
	1270	0 - 7,0					400	0 - 2,4		
	1370	0				(3a)	460	0		

Torque control travel a = mm

* In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	144,0-146,0	1120	charge-air pressure 0,4		1000	24,0-29,0		
(12,5 ± 0,5 mm RW)			600	148,0-152,0	225	0,9 - 1,3		
			charge-air pressure 0			dispersion max.0,15)*		
			500	121,0-127,0	1200	3,9 - 4,4		
					dispersion max. 0,4			
(increase by ± 0,5 cm³!)								

./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

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The numbers denote the sequence of the tests

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			(4) Control-lever deflection in degrees	Lower rated speed: rev/min	Lower rated speed: Control rod travel mm	(3) Torque control: rev/min	(3) Torque control: Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
250-1100 PA 58 R (FD from 801)*										
ca.66	1100	14,0-16,0				ca.10	210	5,7-8,0		
	1150	9,2-13,3					270	3,4-6,0		
	1200	3,6- 9,6					370	2,2-3,8		
	1230	0 - 7,2					430	1,4-2,7		
(2a)	1310	0					570	0 -1,2		
							650	0		

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min	cm³/1000 strokes	(6) Rotational-speed limitat. Note: changed to ...) rev/min	(3a) Fuel delivery characteristics: rev/min	cm³/1000 strokes	Starting fuel delivery (5) Idle: rev/min	cm³/1000 strokes	(4a) Idle stop: rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
* convert when performing repairs: Spring set 1 424 617 022, -- 634 027, -- 619 027. Cam 1 421 332 000 Washers (as required) 1 420 101 023 (then corresponds to 801)								

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			(4) Control-lever deflection in degrees	Lower rated speed: rev/min	Lower rated speed: Control rod travel mm	(3) Torque control: rev/min	(3) Torque control: Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.62	1100	16,0				ca.29	350	6,0		
	1150	11,8	without auxiliary spring				100	19 - 21	1080	0
	1200	5,8					350	5,7-6,3	500	0
	1150	10,5-12,6					400	1,1-3,6		
(2a)	1200	3,5- 8,0	with auxiliary spring				460	0 - 1	380	1,2-1,8
	1320	0 - 1								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min	cm³/1000 strokes	(6) Rotational-speed limitat. Note: changed to ...) rev/min	(3a) Fuel delivery characteristics: rev/min	cm³/1000 strokes	Starting fuel delivery (5) Idle: rev/min	cm³/1000 strokes	(4a) Idle stop: rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2) 1100	144,0-146,0	1120	600	148,0-152,0	350	1,2 - 1,5 dispersion max.0,15 1200 3,9-4,4 dispersion max.0,4	350	6,0

Checking values in brackets

* 1 mm less control rod travel than col. 2

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
250-700										
ca.66	800	14,0-17,3	-	-	-	ca.10	150	7,0-8,0		
	950	0 - 1,5					250	4,3-6,6		
ca.58	700	14,5-17,2					350	2,3-3,5		
	750	9,0-13,0					450	0,8-2,2		
	800	3,0- 9,0					530	0		
	890	0								
250 - 750										
ca.66	800	14,0-17,3				ca.10	150	7,0-8,0		
	950	0 - 1,5					250	4,3-6,6		
ca.62	750	15,0-17,6					350	2,3-3,5		
	800	8,5-14,3					450	0,8-2,2		
	850	1,4- 8,3					530	0		
	900	0								
250 - 800										
ca.66	800	14,0-17,3				ca.10	150	7,0-8,0		
	850	6,0-11,8					250	4,3-6,6		
	900	0 - 5,8					350	2,3-3,5		
	950	0 - 1,5					450	0,8-2,2		
							530	0		
250 - 850										
ca.66	900	12,8-15,8				ca.10	150	7,0-8,0		
	1060	0 - 1,5					250	3,7-5,9		
ca.63	850	15,0-17,8					350	2,2-3,5		
	900	9,3-13,4					450	1,1-2,3		
	950	2,8- 8,8					570	0		
	1040	0 - 1								
250 - 900										
ca.66	900	12,8-15,8				ca.10	150	7,0-8,0		
	950	6,0-11,0					250	3,7-5,9		
	1000	0 - 6,0					350	2,2-3,5		
	1060	0					450	1,1-2,3		
							570	0		
250-950										
ca.66	1000	13,0-15,6				ca.10	150	6,6-8,0		
	1200	0 - 1.5					250	3,9-6,0		
ca.63	950	14,8-17,2					350	1,9-3,4		
	1000	10,5-13,7					450	0,3-2,5		
	1080	2,4- 8,0					550	0		
	1190	0								
250-1000										
ca.66	1000	13,0-15,6				ca.10	150	6,6-8,0		
	1050	8,0-12,1					250	3,9-6,0		
	1100	2,3- 8,2					350	1,9-3,4		
	1200	0					450	0,3-2,5		
							550	0		
250 - 1050										
ca.66	1050	14,0-17,8				ca.10	150	6,6-8,0		
	1100	10,5-14,6					250	3,8-6,1		
	1150	5,7-11,0					350	2,0-3,4		
	1200	0 - 7,2					450	0,4-1,8		
	1290	0					570	0		

Testoil-ISO 4113

Setting of smoke limiter (new version - pump S 95)

Basic setting of pump and governor (Section A - B) without smoke limiter.

Fit smoke limiter: set full-load delivery at stop screw of bell crank at 500 min^{-1} and 0 kp/cm^2 (without charge-air pressure). By pressing on diaphragm (connect up compressed air) adjust stop such that more control-rod travel is obtained than that required for full-load delivery at maximum charge-air pressure.
Then set full-load delivery at stop screw in housing at 1100 min^{-1} and 0.4 kp/cm^2 and measure fuel-delivery characteristics.

Check difference in control-rod travel between pressure-charging and induction approx. 1.4 mm.

Stop adjustment:

At 0.27 - 0.29 kp/cm^2 (197 - 213 mm Hg) and 500 min^{-1} there must have been a 0.1 mm decrease in full-load control-rod travel.

At 0.11 - 0.15 kp/cm^2 (82 - 112 mm Hg) and 500 min^{-1} there must have been a 1.3 mm reduction in full-load control-rod travel.

Adjust by altering initial tension of spring, i.e. turn guide bushing of helical spring.

Reduced full-load deliveries

	Full load in cm^3/1000 strokes (tol. ± 1.0) at n =			Reduced control-rod travel mm		
S 95 .. S 110..	1100	900	750	600 U/min		
Y*	-	160	166	162	+ 0,6	FB 2,4 ± 0,1
X	136	141	144	138	- 0,6	
Z	129	133	134	128	- 1,1	
U	124	128	128	123	- 1,4	
T	120	124	124	118	- 1,6	
S	110	113	112	106	- 2,2	
R	103	103	102	97	- 2,6	
Q	94	94	91	86	- 3,1	
P	86	85	81	75	- 3,6	
O	79	75	70	64	- 4,1	
N	73	67	61	53	- 4,5	
M	69	61	53	44	- 4,8	

* Setting Y only for pump S 110.

En

PE 6 P 100/320 RS 100 RQV 200-1100 PA 60/2R (1)
RS 100 W PA 60/2R
..A..RS 100 Y RQV 200-1100 PA 60/2R (2)
RS 100 V PA 60/2 R (3)

supersedes 11.73
company: Volvo
engine: TD 100 A

Port-closing test with/without ROBO diaphragm

See page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,7-13,4	0,5			2,5 ± 0,1*
600	9	6,1- 7,3				
	12	11,3-12,7				
	15	16,5-18,2				
200	9	4,2- 5,2				

* In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

Adjust the fuel delivery from each outlet according to the values in [ ].

*Con mayor desequilibrio de caudales, modificar correspondientemente la tension previa del muelle de la válvula de presión.

B. Governor Settings

RQV .. 60/2 R (1-3)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
ca.68	1150	15,5-18,3				ca.23	100	7,0-10,0	1150	8,3
	1410	0					200	5,0- 8,4		
ca.66	1100	15,0-18,0					300	2,4- 5,2	-	-
	1200	7,2-12,6					400	0 - 2,2		
	1260	2,0- 9,0					460	0		
	1400	0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

	Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel rev/min 8	Control rod travel mm 9
	0,5 kp/cm²			0	kp/cm³				
(1)	700	145,0-148,0	1140-1150**	700	114,5-118,5	100	ca. 240,0		
(2)	700	125,0-127,0		700	105,0-108,0	225	11,0-15,0	)*	
(3)	700	133,0-135,0		700	115,0-118,0	dispersion max. 2,5			
	(increase by ± 1,0		cm³!)						
			(aumentar en	± 1,0	cm³!)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

A21

1. Pay attention to RQV governor instructions WPP 001/4, 6th Supplement!

2. Sliding-sleeve position - abnormal 36.0 mm with governor 60/2!

3. LDA (manifold-pressure compensator) setting:
   Basic setting of pump and governor without LDA.

   Fit LDA: at 700 min^{-1} and 0 kp/cm^2 set full-load delivery at stop screw of bell crank.

   By pressing on diaphragm - connect up compressed air - adjust stop such that more control-rod travel is obtained than that required for full load at max. charge-air pressure. Then set full load at stop screw in housing at 700 min^{-1} and max. pressure.

4. LDA adjustment - n = 500 min^{-1} - decreasing pressure in kp/cm^2

Pump	S 100	S 100 Y	S 100 V	S 100 W
Setting	0.24-0.27	0.24-0.27	0.16-0.19	0.24-0.27
Measurement	0.07-0.12	0.07-0.12	0.08-0.11	0.12-0.18

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MB11,8 d
1. Edition
En

PE 6 P 100 A 720 RS 279 RQV 300-1100 PA 244 R
RS 279 RQV 300-1100 PA 245 R
RS 279 Z RQV 300-1100 PA 246 R
RS 279 RQV 300-450/1100 PA 261 R
RQV governors - WPP 001/4, 6th Supplement!

supersedes
company: Daimler-Benz
engine: OM 355 (240 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8+0,1 mm (from BDC) (-0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,7 - 12,4	0,4			
600	9	5,0 - 6,2				
600	15	15,3 - 17,0				
200	9	3,5 - 4,5				

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings .. 244R, 245R, 246 R

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1120	15,0-18,0	-	-	-	ca.12	100	6,5-8,2	1120	8,3
	1170	10,0-14,4					250	4,7-6,5		
	1210	5,8-11,4					400	2,5-4,0	-	-
	1260	0 - 7,4					570	0 -1,1		
	1350	0					620	0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	118,0-120,0	1130-1150*			100	14 - 16	600	6.0±0.5 mm control-rod-travel adjustment
	117,0-121,0							

Switching 195-130 min-1
Start approx. 0.05, end min. 2.25
Pressure in kp/cm² (- 246R)

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.74

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm	(4)	Degree of deflection of control lever	rev/min	Control rod travel mm	(3)	rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca.53	1120	12,3-13,0		ca.30	420	9,2-13,0		ca.13	200	7,9-9,7		250	0,2-1,2
	1160	6,6-11,2			500	4,2- 8,4			300	6,0-8,3		600	5,9-6,1
	1210	0 - 6,0			650	0,5- 1,5			400	3,1-5,7		1120	6,0
	1270	0			1100	0,5- 1,5			530	0		1270-1350	end (11)
								(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
See page 1!								

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm	(4)	Degree of deflection of control lever	rev/min	Control rod travel mm	(3)	rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
								(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

A24

A24 En

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 MB 11,8 a
2. Edition
En

PE 6 P 100/720 RS15, Z, Y, X A — RQ250/1100 PA43D, 111D; RQ300/1100 PA111D; RQ250/1125 PA216D

PE 6 P 100/720 RS 5, Z — RQ250/1100 PA44D,138D

PE 6 P 100/720 RS 188(V9594) — RQ300/1100 PA148D(V105C7D) (V10549D)

OM 355 with RQV-governors MB 11,8 c

supersedes 5.71
company:
engine: Daimler Benz OM 355

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	9	5,9 - 6,7	0,5			
1000	6	2,6 - 3,4				
	12	9,3 -10,3				
200	9	2,5 - 3,3				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

RQ .. PA43D, 44D, 148D

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,7-16,3	600	16,0	1120	15,6-16,0	560	0	150	6,5-8,1	-	-
				1150	9,8-14,6			250	4,6-6,9		
				1200	0 - 7,3			350	2,2-4,2		
				1250	0			460	0		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
Pe 5 with governors 44D, Pe 15 with governors 43D, Pe 188 with governors 148D:						
1090	117,0-120,0	500	900	115,0-119,0	100	140 - 160
			700	113,5-117,0		
			450	103,5-108,5	800	80 - 84
(Reduced delivery → S188 with governors 148D)						
1090	68,0- 70,0	500	700	61,0- 64,0	100	14-16
			450	56,0- 60,0		

./.

Checking values in brackets (inrcrease by ± 1 cm³)

4.73

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
250/1100 PA111D. 138D										*	= 0,25 mm
1050	14,8-15,6	1050	15,2	1100	14,8-15,2	570	0	150	7,2-8,1	500	15,7-16,4
				1150	8,0-12,7			250	5,5-7,6		
				1200	0 - 7,6			350	2,6-5,0	650	15,2-15,5
				1260	0			470	0		
300/1100 PA111D										*	= 0,25 mm
1050	14,8-15,6	1050	15,2	1100	14,8-15,2	570	0	150	7,2-8,1	500	15,7-16,5
				1150	8,0-12,7			250	5,5-7,6		
				1200	0 - 7,6			350	2,6-5,0	650	15,2-15,5
				1260	0			470	0		
300/1100 PA148D										*	= 0 mm
600	15,7-16,3	600	16,0	1120	15,6-16,0	560	0	150	6,5-8,1	-	-
				1150	9,8-14,6			250	4,6-6,9		
				1200	0 - 7,3			350	2,2-4,2		
				1250	0			460	0		
250/1125 PA216D										*	= 0 mm
660	15,7-16,3	600	16,0	1140	15,6-16,0	550	0	200	7,0-8,0	-	-
				1180	9,2-14,0			300	4,5-6,7		
				1220	0 - 9			400	0 -2,8		
				1280	0			450	0		

* torque-control travel Maß a =

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	Control rod travel cm^3/1000 strokes / mm
1	2	3	4	5	6	7
1090	82,0-84,0	500	700	69,5 - 72,5		
			450	63,0 - 67,0		
1090	89,5-84,0	500	700	80,0 - 82,5		
			450	72,5 - 77,0		
1090	100,5-103,5	500	900	95,5 - 99,5		
			700	96,5 -100,5		
			450	88,5 - 93,5		
1125	126,5-128,5	500				

En Checking values in brackets

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 BOS 12,3 b
2. Edition
En

PE 6 P 100/721 RS 116 RQ 250/1100 PA 69 D
RQV250/440-750/1100 PA 86 D
RQV250-750/1100 PA 178D

supersedes 3.69
company: Büssing
engine: S 12 D

RQV-governors VDT-WPP 001/4, 6th supplement!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 + 0,1 mm (from BDC) (+0,15 / -0,05)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	10,5-11,1	0,4			
600	9	5,9- 7,1				
600	12	9,6-11,2				
600	15	13,6-15,3				
200	9	1,9- 3,1				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

RQ ... 69 D

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
500	15,7-16,3	550	16,0	1120	14,8-15,2	520	0	150	6,5-8,1	850	15,8-16,0
				1150	10,3-14,1			250	4,5-6,7		
				1200	0 - 8,7			350	1,1-3,1	1000	15,2-15,4
				1260	0			420	0		

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
1100	118,0-121,0	500	800	120,5-124,5	100	16-19
			500	111,5-115,5		

Checking values in brackets

12.74

B3

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min ①a ②a	Degree of deflection of control lever	rev/min	Control rod travel mm ④	Degree of deflection of control lever	rev/min	Control rod travel mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1100 1150 1200 1270	12,0-14,7 6,5- 9,9 0 - 6,7 0	ca.47	650 800 900 1060	12,6-14,5 4,8- 6,8 0,6- 1,0 0	ca.10	200 300 450 610	6,1-8,0 3,0-4,0 1,6-2,8 0	350 600 900- 1000 1100	2,1-2,4 3,8-4,2 7,4-7,6 8,7
		0	n =	800	U/min ③a					

Torque control travel a = 0,4 mm n = 500 U/min

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics high idle speed ⑤a ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	118,0-121,0	1120-1140	800 500	120,5-124,5 111,5-115,5	100	ca.19		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

RQV .. 178 D

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min ①a ②a	Degree of deflection of control lever	rev/min	Control rod travel mm ④	Degree of deflection of control lever	rev/min	Control rod travel mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1100 1150 1200 1260	14,0-16,0 7,3-12,4 0- 7,3 0	ca.62	700 800 860 1100 1150	11,3-14,0 2,2- 5,4 0,6- 1,0 0,5- 1,0 0	ca.12	200 300 400 470	7,0-8,0 5,1-7,3 1,5-3,7 0	450 700 950- 1100	3,2-4,3 6,3-6,8 8,5
		0 mm	n =	700	U/min ③a					

Torque control travel a = 0,4 mm n = 500 U/min

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics high idle speed ⑤a ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	122,5-124,5	1120-1140	700 500	118,0-122,0 110,5-115,5	100	20 - 22 Change-over point 200-130 U/min		

Checking values in brackets

(increase by ± 1,0 cm^3!) * 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 HEN 12,0 b
Edition 3.72
En

PE 6 P 100/821 (A)
LS 80, X, Z — RQ 250/1075 PA 135 DR
LS 80, Y — RQ 250/1075 PA 126 DR
LS 80, W,U — RQV250-1075 PA 68 R
LS 89, Y — RQV250-1075 PA 161 DR
LS8D — EP/RSV P1/6D 7D, 8 DR

supersedes 6.70
company: Henschel
engine: 524-..
6 R 1315-..)
(V10434D,10435D,10652D,10654D,10678D)

See page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	10,4 - 11,2	0,5			
600	9	5,1 - 5,9				
600	12	9,8 - 10,8				
600	15	13,8 - 15,0				
200	9	3,3 - 4,1				

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

RQ 250/1075 PA 135 D (V10434D)

	Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
			Setting point		Test specifications ④		Setting point		Test specifications ⑤			
	rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
**	600	15,7-16,3	600	16,0	1090	15,6-16,0	560	0	150	6,5-8,1		
					1150	7,0-12,5			250	4,8-7,0		
					1200	0 - 7,2			350	2,1-4,6		
					1270	0			460	0		
***	600	15,7-16,3	600	16,0	1090	14,3-14,7	560	0	150	6,5-8,1	650	15,8-16,0
					1150	6,0-12,0			250	4,9-7,0		
					1200	0 - 6,4			350	2,0-4,5	800	14,7-15,0
					1260	0			460	0		

Torque-control travel
on flyweight assembly dimension = **0 mm, *** 0,4 mm

RQ .. PA 136 D (V10435D)

B5

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel / Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
250-1075 PA 68 R										
ca.68	1075	15,0-18,3	-	-	-	ca.15	150	8,7-10,2		
	1150	8,2-13,2					250	5,6- 6,2		
	1230	0 - 7,2					350	3,0- 4,3		
	1320	0					500	0,5- 2,3		
							630	0		
250-1075 PA 161 DR (V10678D)						Torque-control travel a = 0,3 mm				
ca.68	1075	15,0-18,3				ca.15	150	8,7-10,2	1075	0
	1150	8,2-13,2					250	5,6- 6,2		
	1230	0 - 7,4					350	3,0- 4,3	900	0,1-0,3
	1320	0					500	0,5- 2,3	600	0,2-0,4
							630	0		
(1A) 300-850 P1/6D (V 10652D)										
ca.51	850	16,0				ca.28	300	6,0	850	0
	900	12,4	* without auxiliary				100	19 - 21		
	980	5,0	spring				300	5,7-6,3	750	0,2-0,4
	930	8,6-11,0					400	2,0-3,4	400	0,9-1,1
	1000	2,5- 5,0	** with auxiliary				530	0 - 1		
	1120	0 - 1	spring							
350-950 P1/7D (V10653D)										
ca.53	950	16,0				ca.27	350	6,0	950	0
	1000	11,2	*				100	19 - 21		
	1050	5,2					350	5,7-6,3	800	0,5-0,7
	1000	10,3-12,3					450	1,6-3,0	450	0,8-1,0
	1100	1,3- 3,8	**				560	0 - 1		
	1180	0 - 1								
350-1100 P1/8D (V 10654D)										
ca.69	1100	16,0				ca.33	350	6,0	1100	0
	1160	11,6	*				100	19 - 21		
	1230	5,0					350	5,7-6,3	800	0,5-0,7
	1170	9,8-11,8					450	1,5-2,8	450	0,9-1,1
	1250	2,5- 5,2	**				560	0 - 1		
	1360	0 - 1								

Special setting of governor RQV 250-1075 PA 161D (double idle spring):
PA68R

1. The governor spring set may only be pretensioned by max. 1.0 mm (2 detents) per side.

2. When setting the governor, the control lever must reach the max. stop, so as to ensure that a high ratio is attained at the plate cam and variable-fulcrum lever.

3. The breakaway speed is attained by inserting the shim 1 420 101 622 beneath the inner spring.

4. In order to obtain the desired control-rod travel at n = 200 min^{-1}, shims 2 420 102 003 must be optionally positioned on the lower idle spring.

Pay attention to switching point of automatic control-rod stop at n = 200-130^{-1}. (RQV)

The breakaway of the RQ governor is to be set such that the full-load control-rod travel has decreased by 0.6 - 0.8 mm at n = 1115 min^{-1}.

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Test oil temp 40°C (104°F)		Rotational-speed limitation RQV Control-rod stop RQ	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes
1	2	3	4	5	6	7
524 - 24	Pe S80 + RQ .. PA 135DR - 240 PS- Pe S80W + RQV .. PA 68 R					
1075	140,5 - 143,5	600 (RQ) 1095 (RQV)	600	133,0-137,0	100	ca.19
524 - 23	Pe S80X + RQ .. PA 135DR - 230 PS- Pe S80V + RQV .. PA 68R					
1075	128,0 - 131,0	600 (RQ) 1095 (RQV)	600	123,0-127,0	100	ca.17
524 - 21	Pe S80Z + RQ .. PA 135DR - 215 PS- Pe S80U + RQV .. PA 68R					
1075	115,5 - 118,5	600 (RQ) 1095 (RQV)	600	110,0-114,0	100	ca.15
524 - 20	Pe S80Y + RQ .. PA 136DR - 200 PS - Pe S80Y + RQV.. PA 161DR					
1075	108,0 - 111,0 103,0 - 106,0	600 (RQ) 1095 (RQV)	600	99,5-103,5	100	ca.15 - 17
524 - 18	Pe S80 + RQ .. PA 136DR - 186 PS - Pe S80 + RQV.. PA 161DR					
1075	93,0 - 95,0	600 (RQ) 1095 (RQV)	800 600	85,0 - 89,0 88,0 - 94,0	100	ca.15
Pe S 80 + EP/RSV .. 1/6 D - 150 PS-						
850	90,0 - 92,0	870 (RSV)	500	93,0 - 97,0	100	ca.15
Pe S 80 + EP/RSV .. 1/7D - 164 PS -						
950	93,0 - 95,0	970 (RSV)	500	97,0 -101,0	100	ca.15
Pe S 80 + EP/RSV .. 1/8D - 176 PS -						
1100	99,0 - 102,0	1120 (RSV)	800 500	95,0 - 99,0 97,0 -101,0	100	ca.15

(increase by ± 1,0 cm³!)

PE 6 P 100/720 RS 15
5
4

RQ 250/1100 P 6 D
P 9 D

supersedes

company: Daimler-Benz
engine: OM 346
(210 PS)

Special notes on testing see page 2!

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	12	9,3 - 10,3				
	6	2,6 - 3,4				
1000	9	5,9 - 6,7				
200	9	2,5 - 3,3				
	12	6,3 - 7,1				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1050	14,9-15,7	1050	15,3	1110	15-15,3	500	0	100	7,0-8,0	700	16,0
				1150	9,2-12,8			200	6,7-7,6	800	15,6-15,9
				1200	3,0- 5,0			250	6,0-6,6	900	15,3-15,6
				1260	0			300	4,5-5,4	1000	15,3
								400	0,7-2,4		
								460	0		

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/–1000 strokes 2	rev/min 3	rev/min 4	cm³/–1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
1090	100,5-102,0	500	900	98,5-100,5	100	15,0-16,0 (ca.RW 19 mm) Idle delivery 2,1 - 2,3
			700	99,5-102,0		
			450	87,5- 91,0		

Checking values in brackets

B10

Special notes on testing

1. Testing is performed with inertia flywheel EPKG 4 P 1 Z and flushing of the suction chamber. (Inlet on back of pump at boss of first pump barrel viewed from drive end. Return via overflow valve EPVE 176 P 2 likewise on back of pump at boss of sixth barrel.)

2. Basic setting of governor:

   Breakaway <u>not</u> before n = 1100 min^{-1}. The control-rod travel must not exceed 8 mm at n = 1200.

3. Idle-speed regulation:

   Test whether control-rod travel 6.0-6.6 is obtained at n = 250 min^{-1} (value in box, Section B, columns 9 and 10) and whether the control-rod travel is increased by min. 1.5 mm when reducing speed to n = 100 min^{-1}.

4. Setting full-load delivery:

   After setting at n = 1090 min^{-1} care is to be taken to ensure that at n = 1125-1130 min^{-1} the full-load control-rod travel is not regulated by more than 1 mm. After increasing speed to n = 1200 min^{-1}, the control-rod travel must be 3 - 5 mm (value in box, Section 8, columns 5 and 6). If this is not the case, adjust governor spring and check idle-speed regulation again, item 3.

5. Setting control-rod stop:

   With lever position determined as per item 4, reduce speed to n = 500 min^{-1} and read off control-rod travel. Then set stop such that at n = 400 min^{-1} the control-rod travel is the same as before at n = 500 min^{-1}. The stop is to be set very "sensitively" so that the full-load/torque-control profile as of n = 700 min^{-1} is not influenced by excessive pressing on. Particular attention is to be paid to the proper functioning and freedom of movement of the stop.

6. Starting fuel delivery:

   Replace guide bushing EPMB 61 P 2 ... 6 X accordingly if the values as per Section C, column 7 (top) are not attained.

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 BOS 12,3 e
1. Edition
En

PE 6 P 110/721 RS 168 RQV 250-800/1100 PA 150 D (1)
PE 6 P 110/721 RS 168 RQV 250-800/1100 PA 166 (2)
..A..

supersedes
company: Büssing
engine: S 12 ..
DA 61 (310PS-1)
DA 61 (280PS-2)

RQV-test-VDT-WPP 001/4, 6th supplement, see page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) Cyl.6 (+0,15 / -0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	13,8 - 14,5	0,6			
600	6	2,7 - 3,7				
600	12	13,0 - 14,5				
600	15	17,5 - 19,2				
200	6	0,4 - 1,3				

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

RQV..PA 150 D (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1100	14,0-16,0	ca.62	700	14,5-17,0	ca.12	150	6,4-8,0	200	0,2-1,3
	1150	7,0-12,4		800	6,8- 9,6		250	3,7-6,0	600	5,8-6,3
	1200	0- 7,2		900	0,6- 1,0		350	0,7-1,9	900-	
	1270	0		1100	0,6- 1,0		500	0	1100	8,5
				1150	0					
		0	n =	1100	U/min					
			n =	550	U/min	(3a)				

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
(1) 0,6	bar*		0,6	bar				
1100	180,0-182,0	1120	700	179,0-183,0	100	14 - 15		
0	bar		500	177,0-181,0				
1100	106,0-108,0							

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.74

B12

The numbers denote the sequence of the tests

B. Governor Settings

RQV .. PA 166 (2)

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1100	14,0-16,0	ca.62	700	14,0-17,0	ca.12	150	6,4-8,0	200	0,2-1,3
	1150	7,0-12,4		800	6,8- 9,6		250	3,7-6,0	600	5,8-6,3
	1200	0 - 7,2		900	0,6- 1,0		350	0,7-1,9	900-	8,5
	1270	0		1100	0,6- 1,0		500	0	1100	
(5)				1150	0					

(1A)

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitation	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)						Control rod travel
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
(2)	0,6 bar	1120	0	bar				
1100	155,0-157,0		1100	98,0-100,0	100	26 - 28		
			(6a)					

Checking values in brackets

*1 mm less control rod travel than col. 2

Setting LDA:

1. Basic setting (Section A-B) without LDA
2. Full-load delivery (indication with charge-air pressure) at full-load stop screw of governor. Check fuel-delivery characteristics. Fit LDA.
3. Set start of adjustment at guide sleeve of diaphragm housing.
4. Full-load delivery (without charge-air pressure) at bell crank of LDA.
5. Check end of adjustment - n = 500 min^{-1} - increasing pressure in bar:

Pump/governor	Start	End	Difference in control-rod travel
168/150 D	0 - 0.5	0.43-0.47	approx. 5.2 mm
168/166	0 - 0.7	0.52-0.56	approx. 3.8 mm

En

B13

B43

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MB 10,8 s
Edition 5.71
En

PE 6 P 100/720 RS 15 RQV 250-1100 PA45D, 108D, 146D (1)
RQV 250-1100 PA46 (2)
PA94D, 116D (3)
..300-1100..

supersedes 10.69
company: Daimler Benz
engine: OM 346(210)(1)
(185)(2)
(192)(3)

The switching point is the locking and release of the automatic control-rod stop.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,9 - 6,7				
	6	2,6 - 3,4				
	12	9,3 -10,3				
	9	2,5 - 3,3				
200	12	6,3 - 7,1				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

RQV 250-1100 PA45D, 46 (1, 2)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
ca.68	1100	15,0-18,0	-	-	-	ca.10	200	6,5-8,0		
	1150	10,5-14,8					300	3,3-5,7	1090	0
	1200	5,5-11,0					400	1,7-3,1	900	0,2-0,4
	1250	0 - 7,5					500	0 -1,2	700	0,4-0,6
	1340	0					570	0	500	0,4-0,6
						(3a)			(- 45D)	

Torque control travel a = 0,5 mm für 45D; a = 0 für 46

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel rev/min 8	Control rod travel mm 9
1090	100,5-102,0	1120	900	98,5-100,5	100	14 - 17		
			700	99,5-102,0	Change-over point			
			450	87,5- 91,0	250 Idle = 200-130			
					300 Idle = 250-180			

./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

MB 10,8 s

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
RQV 300-	1100	PA 45 D (1)						** a = 0,5 mm		
ca.67	1100	15,0-18,3	-	-	-	ca.12	200	6,1-8,0	1090	0
	1150	10,7-14,9					300	3,2-5,5	900	0,2-0,4
	1200	5,7-11,3					400	1,8-3,3	700	0,4-0,6
	1250	0- 7,6					500	0-1,5	500	0,4-0,6
	1350	0					600	0		
RQV 300-	1100	PA 46 (2)				(3a)		** a = 0,5 mm		
ca.67	1100	15,0-18,3				ca.12	200	6,1-8,0	-	-
	1150	10,7-14,9					300	3,2-5,5		
	1200	5,7-11,3					400	1,8-3,3		
	1250	0 - 7,6					500	0 -1,5		
	1350	0					600	0		
RQV 300-	1100	PA 108D, 146D (1)						** a = 0,5 mm		
ca.68	1100	14,0-17,0				ca.12	250	6,5-8,0	-	-
	1150	9,0-13,5					350	3,2-5,3	1100	0
	1200	2,5- 9,5					400	2,6-3,7	900	0,2-0,4
	1230	0 - 6,8					500	0,9-2,3	600	0,4-0,6
	1300	0					650	0		
RQV 300-	1100	PA 94D, 116D (3)						** a = 1,2 mm		
ca.67	1100	15,0-18,3				ca.12	200	6,1-8,0		
	1150	10,7-14,9					300	3,2-5,5	1100	0
	1200	5,7-11,3					400	1,8-3,3	800	0,9-0,5
	1250	0 - 7,6					500	0 -1,5	500	1,1-1,3
	1350	0					600	0		

** Dimension

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2)								
1090	89,5-91,0	1120	700	80,0-82,5	100	14 - 17		
			450	72,5-77,0				
(3)								
1090	93,5-95,0	1120	900	91,5-94,0	100	14 - 17		
			600	96,5-99,0				
			450	89,5-92,5				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4 MB 10,8 t
Edition 5.72

En

PE 6 P 100/720 RS 15 RQ 250/1100 PA 66 D (1)
RQ 250/1100 PA 50 D (2)
(A) EP/RSV250-900P1/303 (3-4)
RS 15 Z EP/RSV300-1100P1/303 (5)

supersedes DAI10,8t
company: (4.68)
engine: Daimler-Benz
OM 346
(192 PS - 1)
(230 PS - 2)
(165 PS - 3)
(175 PS - 4)
(OM 346/355 - 5*)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	12	9,3 - 10,3	0,4			
1000	6	7,6 - 3,4				
	9	5,9 - 6,7				
200	9	2,5 - 3,3				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

RQ .. PA 66D (1)

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1050	14,4-15	1050	14,7	1110	14,4-14,7	570	0	200	6.6-7,2	450	15,9-16,6
				1150	10,0-13,5			300	4,5-5,5		
				1200	3,0- 5,0			400	0,8-2,5	700	15,3-15,6
				1260	0			470	0	940	14,7-14,8

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
1090	93,5 - 95,0	500	900	91,5 - 94,0	100	14 - 17
			600	96,5 - 99,0		
			450	89,5 - 92,5		

Checking values in brackets (increase by ± 1,0 cm³!)

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
250/1100 PA 50D (2)								torque-control travel Maß a = 0,3 mm			
1050	14,7-15,3	1050	15,0	1100	14,9-15,0	560	0	150	7,0-8,0	700	15,9-16,0
				1120	14,3-15,0			200	6,6-7,6		
				1150	9,8-13,3			300	4,5-5,5	950	15,0-15,3
				1200	3,0- 5,0			400	0,7-2,5		
				1260	0			460	0		

B. Governor Settings

EP/RSV

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
250-900 P1/303 (3 - 4)										
ca.46	900	16,0				ca.21	250	6,0	880	0
	950	9,5	without auxiliary				100	19 - 21		
	980	4,5	spring				250	5,7-6,3	450	0
	950	8,2-10,8					350	1,7-3,8		
	1000	2,0- 4,0	with auxiliary				460	0 - 1	300	1,2-1,8
	1080	0 - 1	spring							
300-1100 P1/303 (5)										
ca.58	1100	16,0				ca.23	300	7,5	1080	0
	1140	12,0	without auxiliary				200	19 - 21		
	1180	7,0	spring				300	7,2-7,8	500	0
	1150	10,0-12,0					400	3,3-4,2		
	1200	3,8- 4,2	with auxiliary				550	0 - 1	350	1,2-1,8
	1340	0 - 1	spring							

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
Pump .. S15 with governor RQ .. PA 50 D (2)						
1090	123.5 - 126.5	600 (RQ)	900	125.0 - 129.0	100	18 - 20.5
			700	122.5 - 126.5		
			450	116.5 - 121.5		
Pump ..S15 with governor 250-900 P1/303 (3 - continuous output 165 bhp)						
880	93.0 - 96.0	910 (EP/RSV)				
Pump ..S15 with governor 250-900 P1/303 (4 - special output 175 bhp)						
880	99.0 -102.0	910 (EP/RSV)				
Pump ..S15Z with governor 300-1100 P1/303 (5 - variable for 346/355*) approx. 10 mm control-rod travel 1020 (EP/RSV)						

*Full-load and possibly engine-speed limitation is marked on nameplate of governor!

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 MB 10,8 u
2. Edition
En

PE 6 P 100/720 RS 15 — RQ 250/1100 PA 81 D, 228 D* (1) supersedes 5.71
RS 5 — RQ 250/1100 PA 82 D — company: Daimler-Benz
RS 15 — RQV300-1100PA 75 (2) engine: OM 346
RS 15 — RQV300-1100PA 83D, 124D,147D (3) (185 PS)

*228 D-functional test of "rolling start disable": Set solenoid such that control rod is 1.5-2.5 mm before stop. RQV governor WPP 001/4, 6th Supplement !

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) (-0,05)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,9 - 6,7	0,4			
	6	2,6 - 3,4				
	12	9,3 -10,3				
200	9	2,5 - 3,3				

Adjust the fuel delivery from each outlet according to the values in ▭.

B. Governor Settings

RQ..PA 81 D, 82 D, 228 D* (1)

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
1050	14,7-15,3	1050	15,0	1120	14,6-15,0	560	0	150	7,0-8,0	500	16,0-16,3
				1150	10,0-13,4			250	5,9-6,5	580	15,7-16,0
				1200	1,0- 7,3			350	2,7-4,1		
				1270	0			460	0	650	15,0-15,3

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel mm 7
1090	89,0 - 91,0 (88,0 - 92,0)	500	700	79,0 - 82,0 (78,0 - 83,0	100	14 - 16
			450	79,0 - 83,0 (78,0 - 84,0		

./.

Checking values in brackets

5.74

B18

B. Governor Settings

RQV...PA 75 (2)

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.67	1100	15,0-18,3					ca.12	200	6,1-8,0	1100	8,3
	1150	10,7-14,9						300	3,2-5,5		
	1200	5,7-11,3						400	1,8-3,3		
	1250	0 - 7,6						500	0 -1,5		
	1350	0						600	0		
							(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1090	89,0-91,5	1140-1160**	700	79,5-83,0	100	14 - 16	To be specified by customer	
			450	72,5-77,0				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

RQV .. PA 83 D, 124 D, 147 D (3)

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.67	1100	15,0-18,3		-	-	-	ca.12	200	6,1-8,0	1000	8,3
	1150	10,7-14,9						300	3,2-5,5		
	1200	5,7-11,3						400	1,8-3,3	s.u.	
	1250	0- 7,6						500	0 -1,5		
	1350	0						600	0		
							(3a)				

Torque control travel a = 0 mm n = 1100 U/min
0,7 mm n = 500 U/min

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1090	89,0-91,0	1140-1160**	700	79,0-82,0	100	14 - 16		
			500	79,0-83,0	Change-over point 250-180 U/min			

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 HEN 12,0 a
Edition 10.69
En

PE 6 P 100/821 LS 80 RQ 250/1075 PA 49 D
..S 80Z, Y, X RQV 250-1075 PA 57 R
RQV 250-1075 PA 68 R*
* Special setting of governor see page 3!

supersedes 1.68
company: Henschel
engine: 523-23 (1)
-21 (2)
-20 (3)
-18 (4)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	10,4 - 11,2	0,5			
600	9	5,1 - 5,9				
600	12	9,8 - 10,8				
600	15	13,8 - 15,0				
200	9	3,3 - 4,1				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

RQ 250/1075 PA 49 D

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	15,7-16,3	600	16,0	1080	15,6-16,0	580	0	150	7,1-8,1	-	-
				1100	12,5-15,8			250	5,5-7,5		
Breakaway not				1150	4,0-11,0			350	2,8-5,2		
before n = 1085-1090				1180	0 - 8,0			480	0		
				1250	0						

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ② rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes mm 7
(1) S	80 - 230 PS		800	131,0-135,0	100	17,5 - 20,0
1075	131,5 - 134,5	550	600	129,5 - 134,5		
(2) S	80Z- 215 PS		800	120,0 - 124,0	100	17,0 - 19,5
1075	121,5 - 124,5	550	600	116,5 - 121,5		
(3) S	80Y- 200 PS		800	105,0 - 109,0	100	16,0 - 18,5
	107,5 - 110,5	550	600	103,5 - 108,5		
(4) S	80X- 180 PS		800	83,0 - 87,0	100	13,0 - 15,5
1075	91,5 - 94,5	550	600	76,5 - 81,5		

Checking values in brackets

B20

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm (1)
1	2	3	4	5	6	7	8	9	10	11
ca.66	1075 1100 1150 1220 1300	15,0-17.6 12,5-16,0 7,4-12,4 0 - 6,8 0	-	-	-	ca.10 (3a)	150 250 350 500 680	7,0-8,0 4,2-6,5 2,4-3,8 1,2-2,6 0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1075	131,5-134,5	1085-1090	800 600	131,0-135,0 129,5-134,5				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm

En

B21

B21

The numbers denote the sequence of the tests

B. Governor Settings

RQV 250-1075 PA 68 R

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1075	15,0-18,3				ca.15	150	8,7-10,2		
	1150	8,2-13,2					250	5,6- 6,2		
	1230	0 - 7,4					350	3,0-4,3		
	1320	0					500	0,5-2,3		
(5)							630	0		

(1A)

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitation	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)						Control rod travel mm
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	

Full load in accordance with pump index as per page 1 - 2 100 18 - 19

* Special setting of governor RQV 250-1075 PA 68 R (double idle spring):

1. The governor spring set may only be pre-tensioned by 1.0 mm (2 detents) per side.
2. When setting the governor, the control lever must attain max. deflection, in order to achieve a high ratio at the plate cam and variable-fulcrum lever.
3. The breakaway speed is obtained by inserting the shim 1 420 101 622 beneath the inner spring.
4. Shims 2 420 102 003 must be placed as required on the lower idle spring, so as to achieve the desired control-rod travel at $n = 200\ min^{-1}$.

PE 6 P 100/720 RS 15 RQ 250/1100 P 18 D
RS 15Z*

supersedes DAI 10,8 p
company: 2.64
engine: Daimler-Benz OM 346 (155 PS) (145 PS)*

Special notes on testing
See page 2!

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	6	2,6 - 3,4				
1000	9	5,9 - 6,7				
	12	9,3 -10,3				
200	9	2,6 - 3,3				
	12	6,3 - 7,1				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1050	14,1-14,9	1050	14,5	1100	14,3-14,5	500	0	150	7,0-8,0	550	15,7-16,0
				1120	11,8-14,5			200	6,6-7,6	700	15,2-15,6
				1150	7,0-11,9			250	5,8-6,6		
				1200	3,0- 5,0			300	4,5-5,5	900	14,6-15,0
				1260	0			400	0,7-2,4	1000	14,5-14,6
								460	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
1090	76,5 - 78,0	500	900	73,5 - 76,0	100	14,0 - 16,0
			700	71,5 - 74,5		Idle delivery
			450	66,0 - 69,5	300	2,1 - 2,3
1090	69,0 - 71,0	500	700	62,0 - 65,0	100	14,0 - 16.0
			450	56,5 - 60,5	300	Idle 2,1 - 2,3

./.

Checking values in brackets

B23

Special notes on testing

1. Testing is performed with the inertia flywheel EPKG 4 P 1 Z and flushing of the suction chamber. (Inlet on back of pump at boss of first pump barrel viewed from drive end; return via overflow valve EPVE 176 P 2 Z on back of pump at boss of sixth barrel).

2. Basic setting of governor:

   Breakaway not before n = 1100 min^{-1}. Control-rod travel must not exceed 8 mm at n = 1200 min^{-1}.

3. Sequence of subsequent testing operations:

   a) Measure full load at n = 1090 min^{-1} and fuel-delivery characteristics at n = 900 and 700 min^{-1}.

   b) Position control-rod stop at n = 500 min^{-1} such that control-rod travel is not cut off at n = 700 min^{-1}.

   c) Measure delivery at n = 450 min^{-1}.

   d) Measure delivery again at n = 700 min^{-1} and establish whether delivery measured above (without control-rod stop) is attained again.

Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4 PEN 10,0 a
Edition 5.71

(1A)

En

PE 6 P 100/320 RS 52 EP/RSV 200-900 P 4/305 R (1)
200.1000P 4/306 R (2)
200-900 P 4/309 R (3)
EP/RSUV200-900 P 0/306,319 (4)
PE 6 P 100/320 RS 51 EP/RSV 200-900 P 1/305 R (5)

supersedes 12.68
company Volvo-Penta
engine TD 100 A
TMD100 A
D 100 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

EP/RSV 250-1150P 5/305 R (6)

Port closing at prestroke 2,6 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,3-12,3	0,5			S52:3,5±0,1
600	6	0,5- 1,2				max.3,2-3,9
	9	4,6- 5,8				S51:2,5±0,1
	12	10,8-12,2				max.2,2-2,9
200	9	2,8- 4,0				

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

200-900 P4/305 R (1)

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.55	900	16,0	without auxiliary spring	ca.25	200	6	900	0
	950	11,4			100	19 - 21		
	1000	4,0			200	5,7-6,3	350	0
	960	8,0-11,6	with auxiliary spring		250	3,0-4,4	250	1,2-1,8
(2a)	1000	2,0- 6,6			350	0-1		
	1100	0 - 1						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to .) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
(1)		910			200	12 - 15		
880	143,0-146,0				dispersion max. 1,5)*			
(2)								
980	135 -138	1020	1000	144 - 147**		** fuel overquantity		
(3)								
980	143 -146	910	700	101 - 104	Idle: dispersion max. 1,5 *			
(4) 880	143 -146	910			200	12 - 15		

Checking values in brackets

* 1 mm less control rod travel than col 2

* In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

C1

C1

B. Governor Settings

EP/RSV (40°) EP/RSUV (35°)

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min (1)	mm
1	2	3		4	5	6		7	8	9		10	11
200-1000 P 4/306 (2)				*				VH = 40°					
ca.62	1000	16,0						ca.25	200	6,0		980	0
	1050	10,8		**					100	19,0-21,0		320	0
	1100	4,0							200	5,7- 6,3		240	1,2-1,8
	1070	6,0-9,8							250	3,0- 4,5			
	1100	2,0-6,0		***					300	0 - 2,4			
	1160	0,3-1,0						(3a)	350	0 - 1,0			
~~200-900 P 4/309 (3)~~				*				VH = 40°					
ca.55	900	16,0						ca.25	200	6,0		880	0
	950	11,2		**					100	19,0-21		320	0
	1000	4,3							200	5,7-6,3		240	1,2-1,8
	970	6,4-10,3							250	3,0-4,5			
	1010	1,0- 5,4		***					300	0- 2,3			
	1070	0 - 1							350	0- 1,0			
200-900 P 0/306, 319 (4)				*				VH = 35°					
ca.47	900	16,0						ca.13	200	8		-	-
	930	9,8		**					100	19- 21			
	950	6,0							200	7,7-8,3			
	950	5,0-8,0							250	5,6-6,7			
	1000	0,5-3,1		***					350	0 -3,1			
	1050	0 -1,0							420	0 -1			

* fuel overquantity

** without auxiliary spring

*** with auxiliary spring

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min (1)	mm
1	2	3		4	5	6		7	8	9		10	11
								(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

En

The numbers denote the sequence of the tests

(3) HEN 10,0 a

EP/RSV 200-900 P 1/305 R (5)

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.50	900	16,0	without auxiliary spring			ca.24	200	6	900	0
	950	12,0					100	19,0-21,0	350	0
	1000	6,6					200	5,7- 6,3		
	980	7,2-10,2	with auxiliary spring				300	0 - 2,4	250	1,2-1,8
(2a)	1020	1-6					360	0 - 1		
	1100	0-1								

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat. Note: changed to ...	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
880	111,0-113,0	910 - 920	600	102,0 - 106,0	200	12 - 15, dispersion max.	200	6,0
							1,5*	

Checking values in brackets ± 0,5 ccm

* 1 mm less control rod travel than col. 2

B. Governor Settings

EP/RSV 250-1150 P 5/305 R (6)

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.64	1150	16,0	without auxiliary spring			ca.29	250	6,0	1130	0
	1250	10,9					150	19 - 21		
	1350	4,4					250	5,7-6,3	500	0
	1250	9,6-11,8	with auxiliary spring				350	1,7-3,7	300	1,2-1,8
(2a)	1250	2,5- 6,4					460	0 - 1		
	1500	0 - 1								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat. Note: changed to ...	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	93,0 - 95,0 (92,5 - 95,5)	1170	950	86,0-90,0 (85,5-90,5)			250	6,0

Checking values in brackets

* 1 mm less control rod travel than col. 2

C3

En

C3

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 SCA 11,0 g
Edition 10.69

En

PE 6 P 100/720 RS 82, Z...M RQV 250-...PA48R (1)
RQV 250-1100 PA 85 R (2)
PE 6 P 100/720 RS 91, Z...M EP/RSV 350-1100 P1/310 R(3)

supersedes 12.68
company: Scania Vabis
engine: DS 11

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Testoil-ISO 4113

Port closing at prestroke 2,6 + 0,1 mm (from BDC) 2,4 + 0,1 ..S91Y

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,6 - 13,2	0,6			3,5 ± 0,1 * (max.3,2-3,9)
600	6	1,1 - 1,9	Start-of-delivery test without - delivery test with Robodiaphragm!			
600	12	12,6 - 13,6				
600	15	17,8 - 19,1	Manifold-pressure compensator and reduced full-load deliveries, page 4			
200	6	0,7 - 1,5				

Adjust the fuel delivery from each outlet according to the values in ☐.

* In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly

B. Governor Settings

250 - 1100 PA 48 R (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a 2a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	Sliding sleeve travel 1: rev/min 10	mm 11
ca.68	1150	15,0-18,2	-	-	-	ca.10	200	5,8-8,0	-	-
	1350	0 - 1,5					300	3,1-4,4		
ca.62	1100	15,0-17,8					400	2,6-3,6		
	1150	10,2-13,8					500	1,8-3,0		
	1200	5,0-10,0					600	0,8-2,0		
	1250	0 - 3,2					780	0		
	1280	0				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed 2b 4a: rev/min 3	Fuel delivery characteristics high idle speed 5a 5b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point 6: rev/min 6	cm³/1000 strokes 7	Torque-control travel 5: rev/min 8	Control rod travel mm 9
		charge-air pressure 0,4			100	24 - 29		
1100	144,0-146,0	1120	600	148,0-152,0	225	0,9-1,3		
(12,5 ± 0,5 mm RW)		charge-air pressure 0				dispersion max. 0,15)*		
			500	121,0-127,0	1200	3,9-4,4		
						dispersion max. 0,4)		
(increase by ± 0,5 cm³!)								./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

C7

The numbers denote the sequence of the tests

250 - 1100 PA 85 R (2)

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1100	15,0-18,3	-	-	-	ca.12	150	7,0-8,0		
	1150	10,4-14,7					250	4,2-6,6		
	1200	5,3-11,0					400	2,0-3,3		
	1250	0 - 6,8					500	0,5-2,0		
(2a)	1330	0					600	0		

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat. Note: changed to ...)	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

EP/RSV 350-1100 P1/310 R (3)

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.62	1100	16,0				ca.29	.350	6,0	1080	0
	1150	11,8	without auxiliary spring				100	19 - 21	500	0
	1200	5,8					350	5,7-6,3		
	1150	10,5-12,6	with auxiliary spring				400	1,1-3,6	380	1,2-1,8
(2a)	1200	3,5- 8,0					460	0 - 1		
	1320	0 - 1								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat. Note: changed to ...)	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	144,0-146,0	1120	600	148,0-152,0	1200	3,9 - 4,4 dispersion max.0,4	350	6,0

Checking values in brackets

* 1 mm less control rod travel than col. 2

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
250 - 700										
68±1,5	800	14,0-17,0	-	-	-	10±1,5	180	6,4-8,0	-	-
	950	0 - 1,5					250	4,2-7,0		
63±1,5	700	15,0-17,6					320	2,6-3,8		
	750	7,5-13,0					400	1,5-2,9		
	800	0 - 8,0					520	0		
	870	0								
250 - 750										
68±1,5	800	14,0-17,0	-	-	-	10±1,5	180	6,4-8,0	-	-
	950	0 - 1,5					250	5,2-6,5		
66±1,5	750	15,0-18,0					320	2,4-3,8		
	800	7,5-13,0					400	1,4-2,8		
	900	0					520	0		
250 - 800										
67±1,5	900	15,0-18,0	-	-	-	10±1,5	180	6,4-8,0	-	-
	1080	0 - 1,5					250	4,2-6,5		
63±1,5	800	15,0-17,6					320	2,3-3,8		
	850	10,0-14,0					450	1,0-2,3		
	900	4,0-10,0					580	0		
	1010	0								
250 - 850										
67±1,5	900	15,0-18,0	-	-	-	10±1,5	180	6,5-8,0	-	-
	1080	0- 1,5					250	4,4-6,5		
65±1,5	850	15,0-18,0					320	2,2-3,8		
	900	9,0-14,0					450	1,0-2,3		
	950	1,0-10,0					570	0		
	1040	0								
250 - 900										
68±1,5	1000	15,0-18,2	-	-	-	10±1,5	180	6,0-8,0	-	-
	1200	0 - 1,5					250	4,0-6,2		
64±1,5	900	15,0-18,0					320	2,5-3,8		
	980	7,0-12,0					450	1,5-2,7		
	1050	0 - 6,4					630	0		
	1120	0								
250 - 950										
68±1,5	1000	15,0-18,2	-	-	-	10±1,5	180	6,3-8,0	-	-
	1200	0 - 1,5					250	4,3-6,5		
66±1,5	950	15,0-18,0					320	2,5-3,8		
	1000	10,0-14,0					450	1,4-3,0		
	1050	3,0-10,0					630	0		
	1150	0								
250 - 1000										
68±1,5	1150	15,0-18,2	-	-	-	10±1,5	180	6,4-8,0	-	-
	1360	0 - 1,5					250	4,3-6,5		
63±1,5	1000	15,0-18,0					320	2,8-3,8		
	1080	8,0-13,0					500	1,6-2,9		
	1150	1,6- 8,6					720	0		
	1270	0								
250 - 1050										
68±1,5	1150	15,0-18,2	-	-	-	10±1,5	180	6,4-8,0	-	-
	1360	0 - 1,5					250	4,3-6,5		
64±1,5	1050	15,0-17,6					320	2,8-3,8		
	1120	9,0-13,3					500	1,5-4,0		
	1200	0,5- 7,8					720	0		
	1300	0								

Setting manifold-pressure compensator (pump S 82)

Basic setting: horizontal position of cam (= without charge-air pressure) of full-load stop is to be set by way of stop screw in top of diaphragm housing.

Check: difference in control-rod travel between pressure-charging and induction = 1.4 mm - correct by changing shim beneath the spacer bushing in bottom of diaphragm housing.

Stop adjustment:

There must have been a 0.1 mm reduction in full-load control-rod travel at 0.27 - 0.29 kp/cm^2 (197 - 213 mm Hg) and 500 min^{-1}.

There must have been a 1.3 mm reduction in full-load control-rod travel at 0.11 - 0.15 kp/cm^2 (82 - 112 mm Hg) and 500 min^{-1}.

If these values are not attained, shims (as per service parts list) must be inserted beneath the helical spring in the diaphragm housing.

Reduced full-load deliveries

S 82.. / S 91..	Full load in cm^3/1000 strokes (tol. - 1.0) / n = 1100	900	750	600 U/min	Reduced control-rod travel mm + 0,6 FB 2,4 ±0,1
Y*	-	160	166	162	+ 0,6 FB 2,4 ± 0,1
X	136	141	144	138	- 0,6
Z	129	133	134	128	- 1,1
U	124	128	128	123	- 1,4
T	120	124	124	118	- 1,6
S	110	113	112	106	- 2,2
R	103	103	102	97	- 2,6
Q	94	94	91	86	- 3,1
P	86	85	81	75	- 3,6
O	79	75	70	64	- 4,1
N	73	67	61	53	- 4,5
M	69	61	53	44	- 4,8

* Setting Y only for pump S 91.

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MB 10,8 r
Edition 2.69
En

PE 6 P 100/720 RS 15
Special notes on testing

RQV 250-1100 P 14 D
P 15 D
P 21 R

supersedes 2.64
company: DAI 10,8 r
engine: Daimler Benz OM 346 (180 PS)

* Refer to VDT-BMP 211/15 for testing of automatic control-rod stop

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	6	2,6 - 3,4				
1000	9	5,9 - 6,7				
	12	9,3 -10,3				
200	9	2,5 - 3,3				
	12	6,3 - 7,1				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.66	1100	15 -17,8	-	-	-	ca.10	150	7,5- 8	-	-
	1120	12,6- 16					250	5 - 7		
	1150	9,5-13,7					350	3,4-3,8		
	1200	3,2- 9,6					500	2,2-3,8		
	1250	0 - 5,2					600	1,1-2,4		
	1300	0				(3a)	730	0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1090	89,5-91,0	1110-1120	700	80,0-82,5	100	14 - 16		
			450	72,5-77,0	Idle	delivery		
					300	2,1-2,3	Control lever	
						dispersion max.0,3)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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Special notes on testing

1. Testing is performed with inertia flywheel EPKG 4 P 1 Z and flushing of suction chamber. (Inlet on back of pump at boss of first pump barrel viewed from drive end. Return via overflow valve EPVE 176 P 2 Z likewise on back of pump at boss of sixth barrel.)

2. Testing/adjustment of governor and full-load delivery as per WPP 001/4.

C14

C14

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MB 11,8 c
1. Edition
En

PE 6 P 100/720 RS 15, Z, Y RQV 300-1100 PA45D, 61D, 104D, 108D, 146D, 198
A

supersedes
company: Daimler Benz
engine: OM 355

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	9	5,9-6,7	0,5			
1000	6	2,6-3,4				
	12	9,3-10,3				
200	9	2,5-3,3				

Adjust the fuel delivery from each outlet according to the values in ☐.

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B. Governor Settings

RQV .. PA45D

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.67	1100	15,0-18,3	-	-	-	ca.12	200	6,1-8,0	-	-
	1150	10,7-14,9					300	3,2-5,5		
	1200	5,7-11,3					400	1,8-3,3	1100	8,4
	1250	0 - 7,6					500	0 -1,5		
	1350	0				(3a)	600	0		

Torque control travel a = 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
Pe	15 **	61D, Pe 15Z **		108D,	146D,	600	6,0+0,5mmRW	
Pe	15 **	104D, Pe 15Y **		45D:			Start of timing	
1075	117,0-120,0	1100:0,5-1,0 mm RW less than column 2	900	115,0-119,0	100	14 - 16	advance: ca. 0,25	
			700	113,5-117,5			End of timing	
			450	103,5-108,5		* ./.	advance: min.2,25-	
							pressure kp/cm²	
** with governor							(S15 with 104D)	

Checking values in brackets

* 1 mm less control rod travel than col. 2

When checking (column 2 and 5) increase by ± 0.4 cm³/100h

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B. Governor Settings

Upper rated speed: Degree of deflection of control lever	Upper rated speed: rev/min Control rod travel mm	Upper rated speed: Control rod travel mm rev/min (1a) (2a)	Intermediate rated speed: Degree of deflection of control lever	Intermediate rated speed: rev/min	Intermediate rated speed: Control rod travel mm (4)	Lower rated speed: Degree of deflection of control lever	Lower rated speed: rev/min	Lower rated speed: Control rod travel mm (3)	Sliding sleeve travel (1): rev/min	Sliding sleeve travel (1): mm
1	2	3	4	5	6	7	8	9	10	11
***	with governor									
****	less than column 2!					(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min	cm³/1000 strokes	Rotational-speed limitation intermediate speed (2b): rev/min (4a)	Fuel delivery characteristics high idle speed (5a) (5b): rev/min	cm³/1000 strokes	Starting fuel delivery Idle switching point (6): rev/min	cm³/1000 strokes	Torque-control travel (5): rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
Pe	15Z ***	61D - 210 PS						
1075	101,0-103,0	1100:0,5-1,0 ****	900	96,0-99,0	100	14 - 16		
			700	97,0-100,0		**		
			450	89,0-93,0				
Pe	15Y ***	61D - 220 PS						
1090	112,0-114,0	1125:0,5-1,0 ****	700	109,5-112,5	100	14 - 16		
			450	98,0-102,0		*		
Pe	15 ***	198						
1090	117,5-119,5	1120	450	104,0-108,0	100	14 - 16 **		

* 1 mm less control rod travel than col. 2

**Switching point of automatic starting fuel delivery 195-130 min-1., however **198 - 250-180 min-1. When checking, increase full-load values (Columns 2 and 5) by ± 1 cm³!

B. Governor Settings

Upper rated speed: Degree of deflection of control lever	Upper rated speed: rev/min Control rod travel mm	Upper rated speed: Control rod travel mm rev/min (1a) (2a)	Intermediate rated speed: Degree of deflection of control lever	Intermediate rated speed: rev/min	Intermediate rated speed: Control rod travel mm (4)	Lower rated speed: Degree of deflection of control lever	Lower rated speed: rev/min	Lower rated speed: Control rod travel mm (3)	Sliding sleeve travel (1): rev/min	Sliding sleeve travel (1): mm
1	2	3	4	5	6	7	8	9	10	11
..PA61D, 104D, 108D, 146D						108D,146D- ***** - 0,5 mm				
						61D,104D,- ***** - 0 mm				
ca.68	1100	14,0-17,0	-	-	-	ca.15	150	8,6-10,0	1100	0
	1150	9,0-13,5					300	4,6- 7,0	600	0,4-0,6
	1200	2,5- 9,5					400	3,4- 4,9		
	1230	0 - 6,8					550	1,1- 2,3	1100	8,4
	1300	0				(3a)	690	0		
..PA 198								***** = - mm		
ca.68	1110	13,4-18,2	-	-	-	ca.12	250	6,9-8,2	200-300	Start
	1140	7,5-14,4					350	3,5-5,7	420	2,6-3,5
	1180	0 - 9					450	0,8-2,0	800	5,0-5,4
	1240	0					610	0	1100	8,1
									1180-1250	end (11)

RQV governor - for setting of sliding-sleeve travel, see test instructions WPP 001/4 - 6th Supplement !

***** Dimension a

Testoil-ISO 4113

En

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Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4 VOL 10,0 b
3. Edition
En

PE 6 P 100/320 RS 52 RQ 200-1100 PA 25/2R
PA 74/2R

Port-closing test with/without ROBO diaphragm
See page 2!

supersedes 12.72
company: Volvo
engine: TD 100 A

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,5 - 12,3	0,5			S52:
600	6	0,5 - 1,2				3,5±0,1*
	9	4,6 - 5,8				(max.3,2-3,9)
	12	11,4 - 12,2				
200	9	2,8 - 4,0				

Adjust the fuel delivery from each outlet according to the values in [ ].

* In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.66	1150	15,0-18,0	-	-	-	ca.10	100	6,0-8,0	1150	8,9
	1400	0 - 1,5					200	4,0-6,2		
ca.62	1100	14,8-17,8					300	1,0-2,8		
	1150	10,8-14,8					400	0,4-1,9		
	1200	6,0-11,7					580	0		
	1350	0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
	0,4 kp/cm²		0,4	kp/cm²	100	ca.240		
700	143,0-146,0	1125	1080	141,0-146,0	200	12 - 15		
	0 kp/cm²				dispersion	max.1,5)*		
700	100,0-104,0							

Checking values in brackets (increase by ± 1,0 cm³!)

* 1 mm less control rod travel than col. 2

11.73

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The numbers denote the sequence of the tests

B. Governor Settings

RQ ... PA 74/2 R

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1150	15,5-18,3	-	-	-	ca.23	100	7,0-10,0	1150	8,3
	1410	0					200	5,0- 8,4		
ca.66	1100	15,0-18,0					300	2,4- 5,2		
	1200	7,2-12,6					400	0 - 2,2		
⑤	1260	2,0- 9,0					460	0		
	1400	0								

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitation	③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to . . .)						Control rod travel
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
			⑥a					

Checking values in brackets

*1 mm less control rod travel than col. 2

1. Setting LDA

   Set start of adjustment - with pressure-charging - 0.25-0.29 kp/cm^2 by way of shims 1 420 100 606 - 612 beneath upper spring seat. When inserting shims, 0.5 mm projection dimension must however be retained at thread.

2. Problems with cranes - with pump 52, governor 25 can be changed to 74.

3. RQV governor - pay attention to WPP 001/4 - 6th Supplement!

   For governor 74/2: set sliding-sleeve position 36.0 mm!

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 VOL 9,6 m
Edition 12.66

En

PE 6 P 100/320 RS 3 RQV 200-1150 P 7/2
RS 11 RQV 200-1100 P 7/2
RS 16 RQV 200-1100 P 16/2
Dimension H as per test instructions 69.5 ± 0.1

supersedes 20.2.64
company: Volvo
engine: TD 96 C

See page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,7 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	6	0,5 - 1,2	0,5			3,5 ± 0,1 (max.3,2-3,9)
	9	4,6 - 5,8				
	12	11,2 -12,2				
200	9	2,8 - 4,0				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
66±1,5	1150	15,0-18,0	-	-	-	10±1,5	100	6,0-8,0	-	-
	1400	0 - 1,5					200	4,1-6,2		
62±1,5	1100	14,8-17,8					300	0,9-2,8		
	1150	10,8-14,8					400	0,4-1,8		
	1200	6,0-11,7					590	0		
	1250	1,0- 8,0				(3a)				
	1350	0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

	Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
0,4 bar	700	132,5-135,5	1125	1170	34,0-39,0	100	mind. 27		
0 bar	700	101,5-105,5			dispersion max. 4	(ca.	20 mm RW)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

./.

C19

1. Full-load setting

2. Adjusting manifold-pressure compensator

   The stop is to be set by means of shims such that the start of adjustment (with pressure-charging) is between 0.24 and 0.27 bar (180 - 200 mm Hg).

3. Low idle and setting of idle stop screw:

   Set control rod by means of control lever at n 200 = 11 - 14 cm^3/1000 strokes (approx. control-rod travel 6.5) and position idle stop screw. The scatter of the individual cylinders may exceed 1.5 cm^3/1000 strokes. In the event of a greater scatter, the initial tension of the valve spring is to be altered appropriately: more initial spring tension produces greater delivery and vice-versa.

4. High idle:

   The delivery must be 34 - 39 cm^3/1000 strokes at n 1170 and max. control-lever deflection; (control-rod travel approx. 6 mm - scatter max. 4 cm^3/1000 strokes)

5. Check starting fuel delivery n 100 = min. 27 cm^3/1000 strokes.

6. Check push-button stop.

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 BOS 12,3 h
1. Edition

En

PE 6 P 120 A 721 RS 307 RQV 300-1050 PA 288 DR
Test equipment: VDT-WPP 110/2 3. Edition

supersedes -
company: Büssing-MAN
engine: D 3256 BTX

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Testoil-ISO 4113

Port closing at prestroke 2,8 + 0,1 mm (from BDC) (+0,15 / -0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	19,7 - 20,4	0,8			
600	9	9,6 - 11,0				
	15	21,3 - 23,2				
200	9	5,0 - 6,2				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
ca.50	1050	15,0-18,8	-	-	-	ca.13	150	9,4-11,0	1150	8,3
	1100	10,0-14,8					250	6,9- 9,2		
	1180	0- 7,4					350	2,8- 5,4	1150	0
	1260	0					450	0	550	1,4-1,5
						(3a)				

Torque control travel a = 1,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b): rev/min (4a) 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
0,7 bar			0,7 bar					
1050	205,5-208,5	1090-1100*	700	192,5-197,5	100	ca.16mmRW		
			0 bar		Change-over point			
			500	108,0-112,0	200-170 U/min			
		(increase by ± 3,0 cm³!)						

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.74

C21

Setting LDA:

1. Basic setting (Section A-B) without LDA.

2. Full-load delivery (indication with charge-air pressure) at full-load stop screw of governor. Test fuel-delivery characteristics. Fit LDA.

3. Set start of adjustment at guide sleeve of diaphragm housing.

4. Full-load delivery (without charge-air pressure) at bell crank of LDA.

5. Check end of adjustment - n = 500 min^{-1} - decreasing pressure in bar:

Pump/governor	Start	End
307/288 D	0.37-0.40	0.14-0.18
Difference in control-rod travel with respect to full load	0.1 mm less	3.3 mm less

PE 6 P 110 A 721 RS 287 RQ 250/1025 PA 268 DR

PE 6 P 120 A 721 RS 287 RQ 250/1025 PA 301 DR ./:
110 = Testing with S nozzles and fuel lines 6 x 1,5 x 600!
120 = Testing with T nozzles and fuel lines 8 x 2 x 1000!

supersedes -
company: F B W
engine: E 3 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 ($^{+0,15}_{-0,05}$) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 11 Ø cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery 12 Ø cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12			12		

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

RQ .. 268 DR

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,1-15,7	600	15,4	1050 1100 1140 1200	13,8-14,1 5,0-10,5 0 - 6,5 0	560	0	200 300 400 460	6,5-8,1 4,2-6,3 0,5-3,0 0	450 950	15,8-16,5 14,0-14,4

Torque-control travel on flyweight assembly dimension a = 0,6 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
LDA 1000	0,7 bar 143,0-145,0 (140,0-148,0)		LDA 600 LDA 600	0,7 bar 153,0 - 157,0 (150,0 - 160,0) 0 bar 106,0 - 112,0 (103,0 - 115,0)	100	14,6 - 16,6

Checking values in brackets

7.75

D1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
287 / 268DR	0,54 - 0,57		0,1
		0,25 - 0,29	2.1

Notes:

(1) when n = 600 rev/min and gauge pressure = 0,7 bar (= maximum full-load control rod travel)

B Governor Settings

RQ .. 301 DR

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
650	15,7-16,3	650	16,0	1040 1100 1150 1210	15,6-16,0 6,8-12,0 0 - 7 0	570	0	200 300 400 470	6,8-8,1 4,4-6,6 0,6-3,2 0	-	-

Torque-control travel on flyweight assembly dimension a 0 mm

Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
LDA 1000	0,9 bar 200,0-204,0		LDA 600	0,9 bar 155,0-159,0	100	14,5-16,5
LDA 1000	0 bar 152,0-158,0					
(increase by ± 3,0 cm^3)						

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor		Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
287	268DR	0,54 - 0,57	0,25 - 0,29	0,1 2,1
287	301DR	0,68 - 0,71	0,46 - 0,50	0,1 1,7

Notes

(1) when n = 600 / 1000 rev/min and gauge pressure 0,7 / 0,9 bar (= maximum full-load control rod travel)

En

Testoil-ISO 4113

D3

D3

Test Specifications Fuel Injection Pumps (1A) and Governors

VDT-WPP 001/4
3. Edition

En

PE 6 P 130 A 720 RS 300 EP/RSV 250-900 P 7/812 (1)
PE 8 P 130 A 920 RS 301 EP/RSV 250-900 P 7/812 (2)
..S300, 301 RQV 750 PA339R ./.
Testing with T nozzles and fuel lines 8 x 2 x 1000!

supersedes 1.76
company Jenbacher Werke
engine C 120 S (1)
C 160 S (2)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12	26,9 - 27,5				
	6	7,4 - 8,6				
	15	36,3 - 38,9				
200	6	2,2 - 3,2				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca.60	900	16,0				ca.25	250	6,0	880	0
	950	9,7	without auxiliary spring				100	19 - 21		
	980	4,0					250	5,7-6,3	290	1,2-1,8
	950	8,2-11,3					350	0,6-3,1		
(2a)	980	3,1- 7,1	with auxiliary spring				450	0 - 1		
	1100	0,3- 1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat Note: changed to ...)	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
ca. 10 mm RW		910						./.

Checking values in brackets

* 1 mm less control rod travel than col 2

9.77

D4

D 4-

Shutoff solenoid: (ELAB)

When installing the solenoid, it is to be noted that the control rod must simultaneously be pulled on to stop by the stop lever!
The stop lever of the ELAB must be introduced into the link of the RSV governor!
Then
Functional test of shutoff solenoid: set solenoid such that control rod comes to a halt 1.5...2.5 mm before end position.
Approximately 21 mm control-rod travel must also be attained with the solenoid connected and the start knob pressed in!

En

D5

RQV 750 PA339R

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.29	710 730 750 775 800	18,4-21,4 14,4-18,6 10,0-12,0 3,5- 5,8 0	-	-	-	- (3a)	-	-	750	5,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
ca.	10 mm RW	760						

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm

En

Testoil-ISO 4113

D6

D6